

NORTH PACIFIC OCEAN, JULY 1937

By WILLIS E. HURD

Atmospheric pressure.—The Aleutian Low was unusually well developed for July 1937, the average pressures at St. Paul, 29.72 inches, and Dutch Harbor, 29.79 inches, being, respectively, 0.12 and 0.15 inch below the normals of the month.

The greater part of the eastern two-thirds of the ocean was covered by an almost unbroken expanse of high pressure, with readings above normal at Tatoosh Island and Midway Island.

Low pressure prevailed in the southwestern tropics.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, July 1937, at selected stations

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow	29.89	-0.03	30.32	29	29.36	1
Dutch Harbor	29.79	-.15	30.32	2	29.20	5
St. Paul	29.72	-.12	30.30	2	29.10	5
Kodiak	29.87	-.07	30.18	2	29.30	23
Juneau	30.05	.00	30.25	11	29.73	3
Tatoosh Island	30.13	+.08	30.32	6	29.88	17
San Francisco	29.93	-.02	30.09	1	29.66	3
Mazatlan	29.88	+.02	29.96	29	29.74	4
Honolulu	30.02	.00	30.10	3	29.91	27
Midway Island	30.14	+.03	30.22	28	30.06	30
Guam	29.80	-.04	29.89	24	29.74	15
Manila	29.72	-.02	29.86	4	29.56	2
Hong Kong	29.63	-.02	29.84	8	29.41	29
Naha	29.71	-.01	29.92	7, 8	29.41	22, 31
Chichishima	29.88	+.03	30.03	6, 7	29.71	23
Nemuro	29.84	-----	30.09	15, 17	29.56	11

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales.—No cyclones of importance occurred on middle and upper waters of the North Pacific in July 1937, although several Lows traversed middle latitudes of the Far East and in higher latitudes of the ocean, resulting in the unusually deep Aleutian Low this month. Over most of the eastern half of the sea area, except the extreme northern part, there were no disturbances of a cyclonic nature reported.

Indicative of the generally quiet nature of the weather in the Pacific extratropics is the fact that only two gales of moment are contained in the July ships' reports received. One is a south-southeast gale of force 9, with small depression of the barometer, experienced by the American steamer *General Sherman* near 48° N., 178° W., which occurred on the 1st; the other is a southerly gale of force 10, barometer 30.01, encountered by the American steamer *Golden Mountain*, near 37° N., 149° E., on the 13th.

Tropical cyclones.—Two tropical cyclones sufficiently energetic to be termed typhoons occurred in the Far East this month. The earlier, that of June 30–July 5, was mentioned in our report of last month as having caused hurricane velocities on the 30th between Luzon and the Marianas. The two storms are described in the subjoined report by Rev. Bernard F. Doucette, S. J., of the Philippine Weather Bureau. In further connection with the earlier typhoon, it may be added that on July 1, when the disturbance was east of northern Luzon, the Norwegian motorship *Skramstad* reported an east-southeast gale of force 8, barometer 29.42, near 18° N., 128° E., and on the 3d the French motorship *Pierre L. D.* had a west-northwest gale of force 9, barometer 29.47, near 18° N., 119° E.

In the American tropics a gale of force 8 from the north was experienced by the American steamer *Birming-*

ham City on the 22d on the lower waters of the Gulf of Tehuantepec. As there were no evidences of a cyclonic disturbance in the vicinity on that and on the following days, while an anticyclone over the United States was pressing into the Gulf of Mexico, the gale may undoubtedly be classed as one of the rare summer Tehuantepecers.

Fog.—Frequent fog was observed over the western half of the northern steamer routes on from a quarter to a third or more of the month. Some ships in upper east longitudes observed fog for 3 or more days in succession with only brief intermissions. The Norwegian motorship *Bonneville* reported being in fog for about 90 percent of the time from the 4th to 9th of July, between 41°30' N., 151°20' E., and 48°40' N., 176°10' E. The Dutch motorship *Djambi* had fog for most of the time from the 25th to the 31st, between 43°15' N., 171°20' E., and 43°23' N., 147°10' W. In upper west longitudes fog was less frequent and extensive, but occurred on from 1 to 5 or more days from the 180 meridian to the American coast. Cruisers in the Bering Sea reported fog from the 12th to 18th. Ships off the Oregon coast noted fog on 2 days, off the California coast on 4 days, and off the Lower California coast on 3 days.

SMALL TROPICAL DISTURBANCE OF LATE JULY, 1937

By WILLIS E. HURD

July 29–August 2.—During July 29 radio reports from the eastern part of the Gulf of Mexico, off the Florida coast, indicated the existence of a minor tropical disturbance with gentle cyclonic circulation and slight barometric depression. A special report, however, later received by mail from the American steamer *Mariana*, going from Tampa toward New Orleans, showed that some storm development had occurred during the morning of the 29th. The ship reported a southeast gale of force 8, barometer 29.86, at 6:30 a. m., E. S. T., in latitude 27°41' N., longitude 83°18' W.; and at 8:30 a. m., a southwest wind of force 7, barometer 29.82, in 27°46' N., 83°37' W. At 9 a. m. the wind had changed to northwest, force 5, with lowest barometer, 29.80.

As the disturbance moved toward the coast, an estimated wind velocity of 40 to 45 miles an hour occurred at Egmont Key, at the entrance to Tampa Bay, at about 3 p. m., barometer 29.85. At that time the American steamship *Mundixie*, about 30 miles northwest of Egmont Key, as later reported by telephone, encountered a 60-mile gale from the southwest, barometer 29.62. The observed wind shifts on the vessel were from east through southeast and south to southwest. All evidence at hand shows that the strong winds of the disturbance on this day occupied only a very small area.

The disturbance crossed the west Florida coast north of Tampa late in the afternoon, moving northeastward. At Tampa the lowest barometer, 29.80, occurred at 6:25 p. m., and the maximum 5-minute wind velocity, 51 miles per hour from the southeast, at 6:34 p. m. At this station wind velocities exceeding 30 miles per hour lasted from 5 to 7 p. m. The heaviest rainfall, 8.88 inches in 24 hours, was reported at Clearwater.

In crossing Florida, according to Gordon E. Dunn, forecaster on duty at the Weather Bureau office at Jacksonville, "the storm speedily lost intensity in wind and rainfall and passed into the Atlantic near Daytona Beach about 4 a. m. (of the 30th) attended by about a 20-mile wind and very little rain." At 7 a. m., E. S. T., of the 30th the disturbance, then of mild force, was centered near 30° N. 80½° W. No gales were reported during the day, but at 1 a. m. (local time) of the 31st, the northbound Honduran

steamship *Tela*, in 33°10' N., 78°08' W., encountered a northeast gale of force 9, lowest barometer 29.75. Two hours later the wind at ship had diminished to force 6 from the northwest.

Between 6 and 7 a. m. (local time) the American steamer *Clare*, southbound, near 34°20' N., 76°35' to 76°40' W., ran into northwest gales of force 9—extreme force 10. At 8:30 a. m. the ship, with little change in position, was evidently in the center of the cyclone, with lowest barometer 29.44, wind southeast, force 2.

At 7:30 a. m., E. S. T., the storm was centered a short distance southwest of Hatteras, continuing northeastward at a speed of about 20 miles an hour, which was almost two times its progressive rate on the 30th. During the forenoon its center passed very close to Hatteras, where the maximum wind velocity, from the northwest, was at the rate of 65 miles an hour, lowest barometer 29.53.

At 2 p. m., local time, of the 31st, the American steamer *Coppename*, Castilla to Boston, reported the lowest barometer, 29.40, observed in connection with the storm. This was in the approximate position 36°08' N. 74°06' W. The ship experienced heaviest wind at 4:30 p. m. with a gale from northwest, force 9, accompanied by squalls of greater intensity. The highest recorded wind force reported by any ship was 11, north-northwest, encountered on board the Dutch steamship *Medea*, at 3 p. m. (local time), lowest barometer 29.58, in 36°48' N. 73°54' W. The next highest, force 10, north-northeast, was experienced by the French steamer *Capitaine Paul Lemerle*, at local noon, in 36° N., 75° W., barometer 29.92 (uncorrected).

Other vessels that reported gale winds in the vicinity on the 31st were the American steamer *Peten*, northwest 9, lowest barometer 29.79, in 35°08' N., 75°12' W., at noon; the American motorship *Gulfpride*, north 8, lowest barometer 29.82, near 36° N., 75° W., at noon; the American steamship *Santa Lucia*, northwest 8, lowest barometer 29.56, in 36°30' N. 73°42' W., at 2 p. m.; the American steamer *Turrialba*, southwest 8-9, lowest barometer 29.64, near 38° N. 71° W., at 7 p. m.; and the British motorship *Wellfield*, southwest 9, barometer unrecorded, near 38° N. 68° W. The *Turrialba* and the *Wellfield* met diminishing gales which continued until 1 a. m. of August 1.

Thereafter, with abating intensity, the disturbance moved toward Nova Scotia, the coast of which it crossed late on August 1, and dissipated over the lower St. Lawrence Valley during the night of August 2-3.

The report of the forecaster, Mr. Dunn, at Jacksonville, said that, "except for some road washing at Clearwater and a slight fruit loss in Pinellas County, no damage resulted from the storm" in the Florida district.

As early as the character of the disturbance off the Florida west coast became known, storm warnings were issued at 5:30 p. m. of July 29 for the coast from Palmetto to Tarpon Springs. Thereafter, through the 31st, advisories or warnings were issued for the coast as far northward as the Virginia Capes.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, JULY 1937

By Rev. BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

Typhoon, June 30-July 5, 1937.—A low-pressure trough extending from the Philippines to the Mariana Islands, June 27 and the following days, finally manifested itself as a depression, June 30, about 550 miles in a northerly direction from Yap. As it moved westerly, it intensified and became a typhoon, the morning of July 2, about 200 miles east by south of Aparri. Its

course threatened the whole of northern Luzon, until late in the afternoon, when it shifted to the northwest, the center then passing a short distance north of Aparri and, a few hours later, a short distance south of Calayan. After crossing the central part of the Balintang Channel, it continued its northwest course across the northern part of the China Sea, losing its strength when it approached the coast line of China, filling up a short time after entering the continent.

The intensity of the typhoon is well indicated by the observations made at Calayan. A relative calm was experienced there from 9 a. m. to shortly before 11 a. m. The absolute minimum occurred at 8:45 a. m., when 718.85 millimeters (28.301 inches) was recorded, with southeast winds, force 8. At Aparri, a few hours before, 739.81 millimeters (29.127 inches) was recorded with west winds, force 8 (July 3, 4:02 a. m.).

According to reports, only one life was lost in the Philippines due to the typhoon, when a man was reported killed near Baguio. In the China Sea, however, a fishing vessel from Formosa was driven southward by the northerly winds of the typhoon and foundered near Cabugao (latitude 17°50' N., longitude 120°25' E.).

Three of the crew were drowned and the seven remaining members swam to shore. The only other marine casualty reported was the S. S. *Ronsan Maru*, which took shelter in Port San Vicente, near Aparri, and was driven ashore by the strong winds. She was refloated after the storm had passed and was not injured to any appreciable extent, according to the newspaper reports.

Typhoon, July 17-25, 1937.—Pressure values at Guam and Yap were quite low July 17 and 18, so much so that it was certain something was developing over those regions. No definite center appeared, however, until the morning of July 19, when, about 360 miles east of north of Samar, there appeared a depression. It apparently had formed during the preceding night and was moving in a west-northwest direction. It had developed into a typhoon the next morning as it was inclining to the northwest. The morning of July 21 found it located over the eastern part of the Balintang Channel, gradually inclining to the north. Late that afternoon, it was definitely moving northeast, but on the 22nd it shifted to the north, passing about 60 miles east of Naha and then less than 50 miles west of Oshima, moving in a northerly direction. On July 25 it was approaching Kiu-Siu Island, the western part of which was crossed the next day, moving north-northeast. The typhoon was in the Sea of Japan, July 27, moving north-northeast, as this article was being prepared.

When the typhoon was moving toward the archipelago, July 19 and 20, the S. S. *Steel Traveler* and the S. S. *Tjimonoeck* sent observations which definitely indicated the intensity of the storm.

On the morning of July 20, the center was nearer to these two ships than on any other day. At 5 a. m. the S. S. *Tjimonoeck* reported from latitude 12°48' N., longitude 128°00' E. a barometer of 752.4 millimeters (29.622 inches) with west-northwest winds, force 4. The S. S. *Steel Navigator* at 8 a. m. of the same day had, in latitude 13°42' N., longitude 127°36' E., north-northwest winds force 5, and a pressure of 754.1 millimeters (29.689 inches). Both ships reported rainy weather with squalls.

At this period, the typhoon was not fully developed. When it reached the Balintang Channel, the stations of Luzon did not have pressures below 750 millimeters (29.528 inches), but there was a definite circulation evident and it was certain that a center, perhaps small, existed in the Pacific east of the archipelago. When the